

I 75 the area, the spectral peak is observed to be shifted to a lower frequency side than the peak frequency 522 cm⁻¹ of the monocrystal silicon. Further, the area is found to have an apparent grain diameter of 50 to 500 Å from calculation using peak width at half height, and thus the area seems to have a microcrystal-like state. In fact, there are many areas having such a microcrystal-like state in the silicon semiconductor film, and each of the areas has a cluster structure. These areas are linked through the silicon-anchoring therebetween, so that the silicon semiconductor film 3 has a semi-amorphous structure.

Sub E⁶ Column 8, paragraph beginning at line 56;

I 171 (13) [These] The boron-doping and phosphorus-doping are carried out through the insulting film 4. However, as shown in Fig. 1(B), the gate electrodes 5 and 5' and the mask 5" may be used as a mask to remove the silicon oxide film 4 on the silicon semiconductor film 3, and then boron and phosphorus are directly doped into predetermined areas of the silicon semiconductor film 3 by the ion injection (ion implantation) method.

IN THE CLAIMS:

Sub E⁷ Please amend claims 1 and 5 as follows:

- CM I 171 (13) 1. (Twice Amended) A device for [reading an image] sensing a light comprising:
- a semiconductor layer formed on a substrate, said semiconductor layer comprising [an image] a light sensor region and a semiconductor switch region adjacent to

I 171 173 and operatively connected with said [image] light sensor region,

173 D1 wherein [said semiconductor layer has a] ~~[(semi-amorphous)]~~ structure comprising a mixture of amorphous and crystalline structures, in which] a Raman spectrum of the semiconductor film exhibits a peak deviated from that which stands for a single crystal of the semiconductor.

Subt
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> 5. (Twice Amended) A device for [reading an image] sensing a light produced by a process comprising the steps of:

depositing a semiconductor material on a substrate;

forming a photoelectric conversion semiconductor device on said substrate comprising a p-type impurity semiconductor region, an intrinsic semiconductor region, and an n-type impurity semiconductor region, a semiconductor region of said photoelectric conversion semiconductor device being made of said semiconductor material; and

forming a thin film transistor on said substrate which constitutes an electric circuit required to [read an image] ~~[sense a light]~~ drive said photoelectric conversation semiconductor device, a semiconductor region of said thin film transistor being made of said semiconductor material;

wherein said semiconductor regions are arranged in order with said p-type impurity semiconductor region adjacent said intrinsic semiconductor region and said intrinsic semiconductor region adjacent said n-type impurity semiconductor region in said

photoelectric conversion semiconductor device, said order being in a direction perpendicular

to that in which [an image] a light to be read sensed is incident thereon.

Please add new claims 15-30 as follows:

15. A device for reading an image comprising:

a semiconductor layer formed on a substrate, said semiconductor layer comprising an image sensor region and a semiconductor switch region adjacent to and operatively connected with said image sensor region,

wherein said semiconductor layer has a semi-amorphous structure comprising a mixture of amorphous and crystalline structures, in which a Raman spectrum of the semiconductor film exhibits a peak deviated from that which stands for a single crystal of the semiconductor.

16. The device of claim 15 wherein said semiconductor layer comprises hydrogen doped silicon.

17. The device of claim 15 wherein said semiconductor switch region comprises a thin film transistor of which active region is formed of said semiconductor layer.

18. The device of claim 15 wherein said image sensor region comprises at least two semiconductor regions having different electrical properties and forming a junction.

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19. A device for reading an image produced by a process comprising the steps of:
depositing a semiconductor material on a substrate;
forming a photoelectric conversion semiconductor device on said substrate
comprising a p-type impurity semiconductor region, an intrinsic semiconductor region, and
an n-type impurity semiconductor region, a semiconductor region of said photoelectric
conversion semiconductor device being made of said semiconductor material; and
forming a thin film transistor on said substrate which constitutes an electric
circuit required to read an image, a semiconductor region of said thin film transistor being
made of said semiconductor material;
wherein said semiconductor regions are arranged in order with said p-type
impurity semiconductor region adjacent said intrinsic semiconductor region and said intrinsic
semiconductor region adjacent said n-type impurity semiconductor region in said
photoelectric conversion semiconductor device, said order being in a direction perpendicular
to that in which an image to be read is incident thereon.
20. The device of claim 19 wherein said two semiconductor regions of the image
light sensor region are laterally arranged on said substrate.
21. The device of claim 19 wherein said photoelectric conversion semiconductor
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device further comprises an amorphous semiconductor film provided on a side of said intrinsic semiconductor region on which said image is incident through said amorphous semiconductor film.

Sub E¹⁰

22. A device for reading an image comprising:

a semiconductor layer formed on a substrate, said semiconductor layer comprising an image sensor region and a semiconductor switch region adjacent to and operatively connected with said image sensor region,

wherein said semiconductor layer has at least one of an electron mobility 15-100 cm²/V·sec and a hole mobility 10-100 cm²/V·sec.

Sub E¹¹

23. A device for reading an image comprising:

a semiconductor layer formed on a substrate, said semiconductor layer comprising an image sensor region and a semiconductor switch region adjacent to and operatively connected with said image sensor region,

wherein said semiconductor layer has a semi-amorphous structure in which a Raman spectrum of the semiconductor film exhibits a peak deviated from that which stands for a single crystal of the semiconductor, and said semiconductor switch region comprises complementary p-channel and n-channel thin film transistors.

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24. The device of claim 23 wherein said semiconductor film comprises hydrogen doped silicon.

25. The device of claim 23 wherein said image sensor region comprises at least two semiconductor regions having different electrical properties and forming a junction.

26. The device of claim 25 wherein said two semiconductor regions in said image sensor region are arranged in a lateral direction on said substrate.

9 Subt E¹²
27. The device of claim 23 wherein said semiconductor layer has at least one of an electron mobility in a range from 15 to 100 cm²/V·sec and a hole mobility in a range from 10 to 100 cm²/V·sec.

28. The device of claim 15 wherein said semiconductor layer has at least one of an electron mobility in a range from 15 to 100 cm²/V·sec and a hole mobility in a range from 10 to 100 cm²/V·sec.

Subt E¹³
29. A device for sensing a light comprising:
a semiconductor layer formed on a substrate, said semiconductor layer comprising a light sensor region and a semiconductor switch region adjacent to and